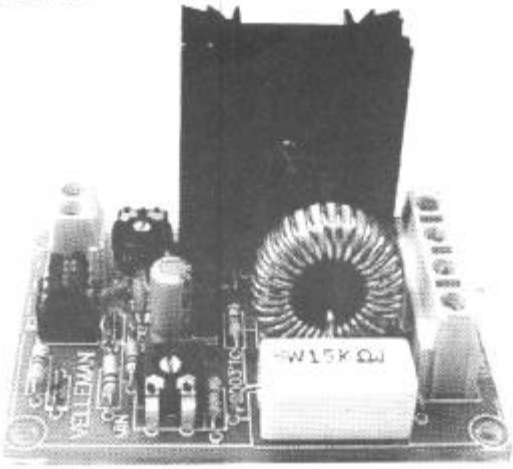
velleman-kit HIGH-Q

K8003

DC CONTROLLED DIMMER

- Supply voltage: 110V or 220-240V, 50 or 60Hz
- Can be used for: 24V AC
- Max. load: (3.5A) 750W/220V, 380W/110V, 80W/24V
- Continue adjustable from 0 to max.
- DC control voltage between 0 en 10VDC
- Maximum control current: 2.25mA at 12V
- Optical isolated DC input
- Isolated triac
- Dimensions(WxLxH): 50x75x45mm

modifications reserved



DC CONTROLLED DIMMER

This small but handy circuit is ideal for replacing an existing dimmer or switch, in order to be able to control a lamp, set of lamps or even a moter via an adjustable DC voltage. One obvious application is control via the K8000 interface board, thanks to its optically isolated input.

TECHNICAL DATA

- Supply voltage: 110V or 220-240V, 50 or 60 Hz
- Also suitable for 24V AC supply
- Max load: 750W/220V, 380W/110V, 80W/24V
- Infinitely adjustable from zero to max power
- Minimum load current can be adjusted
- Control via DC voltage
- Maximum control voltage between 0 and 10V(-1V +2V)
- Optically isolated control input
- Isolated triac
- Dimensions: 50 x 75 mm

ASSEMBLY

- MOUNT ALL COMPONENTS AGAINST THE P.C.B.
- USE A SMALL SOLDERING IRON OF MAX. 40W
- USE THIN (1mm) SOLDERING TIN.
  DO NOT USE SOLDERING GREASE!
- CARELESS ASSEMBLY WILL UNDOUBTEDLY LEAD TO PROBLEMS

Mount the components in the order indicated in the separate parts list. The parts marked with (!) require special attention in the assembly instructions.

1- Mount the 1/4W resistors.
   With R6 an R7 the choice must be made between 110V, 220V or 24V operation.
2- Mount the diodes. Check the polarity !

3- Mount the capacitors.
4- Mount the electrolytic capacitor. Check the polarity !
5- Mount the IC sockets.
6- Mount the trimpots.
7- Mount the screw connectors.
8- Mount R8: 15k/5W or 1k5/1W, depending on 110V/220V or 24V operation.
9- Assemble the triac:
The triac must first be mounted onto the heatsink (see fig.), then the heatsink with triac can be fixed to the PCB by means of the two screws. Now the triac connections can be soldered in place.
10- Mount the suppressor coil.
11- Mount the IC's in their support. Pay attention to the notch!

OPERATION

For connection of a motor or lamp, see fig. 1.0.
For halogen lighting, see fig. 2.0.
For control via the K8000 interface board, see fig. 3.0.
ATTENTION:
During operation the entire circuit is at mains voltage. Mains voltage is hazardous.

SET UP

Connect a digital voltmeter to the PCB in parallel with the load.
Set both trimpots to the middle of the range of adjustment.
Switch in the control voltage and the supply voltage.
Set the control voltage to 0V.
Adjust RV1 (Min) until the voltmeter reads 0V.
Set the control voltage to maximum.
Adjust RV2 (Max) until the voltmeter reads the maximum voltage.
Repeat both adjustments once again.
The circuit is now ready for use.
NOTE:
In some cases it can be useful to set the minimum level such that

there is a small pre-voltage present, such as for example with stage and theatre lighting.

A P8003

1 1-4W

R1: 4K7 (4-7-2-B)
R2, R3: 100K (1-0-4-B)
R4: 470K (4-7-4-B)
R5: 1M (1-0-5-B)

24VAC:
R6: 15K (1-5-3-B)
R7: 39K (3-9-3-B)

110V:
R6: 100K (1-0-4-B)
R7: 220K (2-2-4-B)

220- 240VAC:
R6: 220K (2-2-4-B)
R7: 470K (4-7-4-B)

2

D1, D2: 1N4148 !
D3: 1N4007 !

3

C1: 4n7 (472)
C3: 100nF/250VAC
C4: 100nF (104 - µ1)

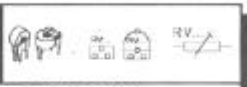
4

C2: 100µF !

5

IC1: 6P
IC2: 8P

6

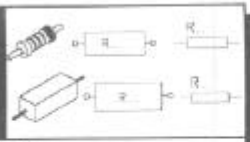


RV1: 220K (250K)
RV2: 2M (2M5)

7

J1: 2P
J2: 2 X 2P

8



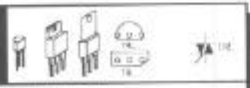
24VAC:
R8: 1K5 (1-5-2-B)

110 - 240VAC:
R8: 15K

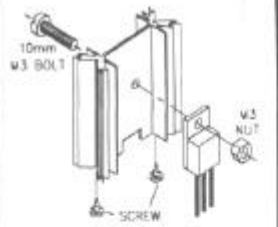
11

IC1: 4N27 !
IC2: TEA1007 !

9



TR1: TRIAC !



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L1: 50µH / 6A

FIG. 1.0

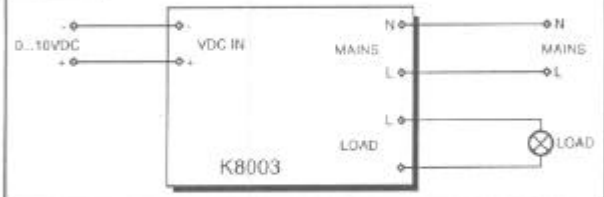


FIG. 2.0

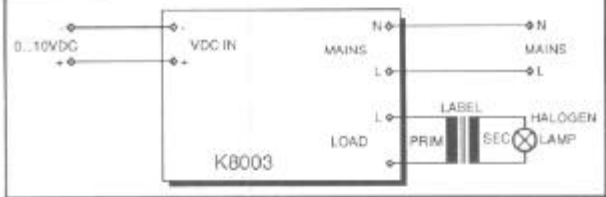
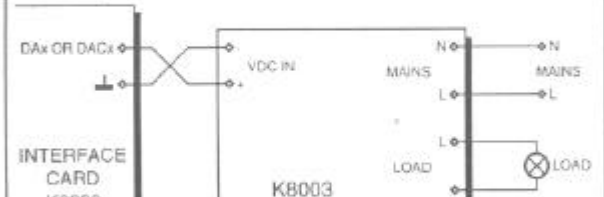
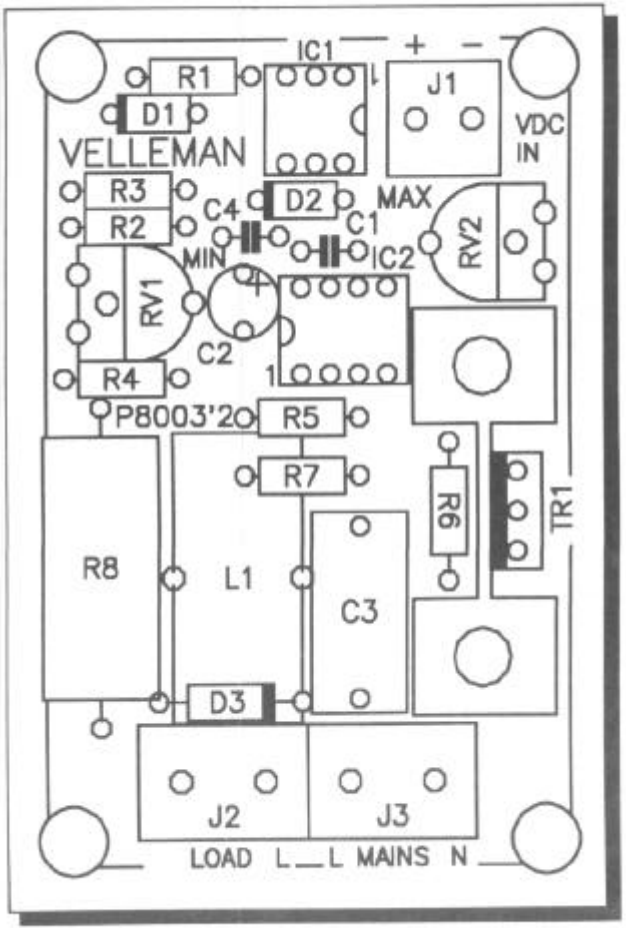
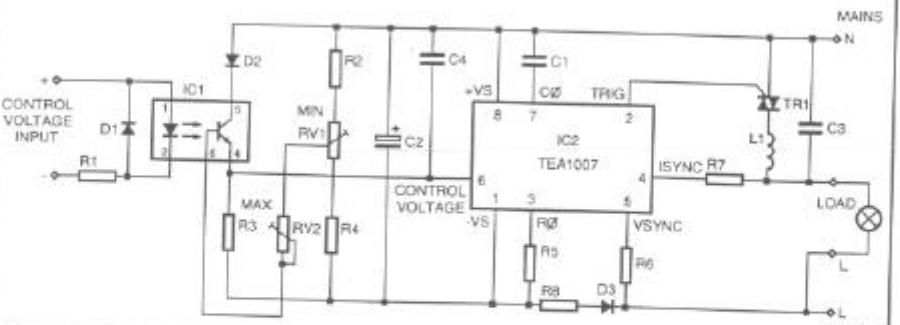


FIG. 3.0




IC1
+
−
R1
J1
D1
VDC
IN
VELLEMAN
R3
D2
MAX
C4
C1
R2
IC2
RV2
MIN
RV1
C2
R4
P8003'2
R5
R7
R6
TR1
R8
L1
C3
D3
J2
J3
LOAD L
L MAINS N



MAINS	R6	R7	R8
220-240VAC	220K	470K	15K/5W
110VAC	100K	220K	15K/5W
24VAC	15K	39K	1K5/1W